(April 5, 2004)

Membrane Waterproofing System A Primer

The primer used to bond membrane to the deck and to seal seams and patches shall be a water resistant adhesive compatible with the System A membrane. The primer shall be of suitable consistency for application by brush, roller, or spray without further dilution.

Membrane Waterproofing System B Primer

The primer, if required by the membrane manufacturer, shall be compatible with the System B membrane.

Membrane Waterproofing System C Materials

Asphalt Cement

The asphalt shall be either PG58-22 or PG64-22 conforming to Section 9-02.1(4)A.

Rubber Extender Oil (Method 1)

The extender oil shall be a resinous, aromatic hydrocarbon meeting the following requirements when tested as indicated:

Test	ASTM Test Method	Requirement
Viscosity, SSU at 100F	D 88	2,500 min.
Flash Point, COC Open Cup	D 92	392F min.
Molecular Analysis:	D 2007	
Asphaltenes, percent by Weight	0.1 max.	
Aromatics, percent by Weight	55.0 min.	

Kerosene Type Diluent (Method 2)

The kerosene type diluent used shall be compatible with all materials used and shall have a flash point (ASTM D 92) of not less than 80F. The initial boiling point shall be not less than 300F with a total distillation (dry point) before 450F (ASTM D 850). The Contractor is cautioned that a normal kerosene or range oil cut may not be suitable.

Ground Rubber Components (Method 1)

The rubber shall meet the following physical and chemical requirements:

The granulated crumb rubber shall contain 22 ± 5 percent by weight natural rubber and shall meet the following requirements:

Sieve Size	Percent Passing
U.S. No. 8	100
U.S. No. 30	40-75
U.S. No. 50	10-35
U.S. No. 100	0-15

The sieves shall comply with AASHTO M 92. All percentages are by weight.

The specific gravity of the rubber shall be 1.15 ±0.05 and shall be free of fabric, wire, or other contaminating materials, except that up to four percent of calcium carbonate may be included in the rubber to prevent particles from sticking together.

Ground Rubber Components (Method 2)

The combined granulated rubber shall consist of a minimum of 80 percent by weight of vulcanized rubber produced by the processing of tires. The rubber shall consist of one type or a blend of types as indicated below. The type or blend selected shall be based on laboratory testing by the asphalt/rubber supplier.

The granulated rubber types shall meet the following gradation:

Sieve Sizes	Percent Passing		
	Type 1	Type 2	Type 3
U.S. No. 8	100	---	---
U.S. No. 10	95-100	---	---
U.S. No. 16	---	100	100
U.S. No. 30	0-10	60-90	95-100
U.S. No. 50	0-5	0-20	30-60
U.S. No. 80	---	0-5	15-35
U.S. No. 200	---	---	0-10

The sieves shall comply with the requirements of AASHTO M 92. All percentages are by weight.

The individual granulated rubber particles, regardless of diameter, shall not be greater in length than 0.250 inch for Type 1 or 0.125 inch for Type 2 and Type 3.

The combined granulated rubber shall have a specific gravity of 1.15 ±0.05 and shall be free of loose fabric, wire and other contaminants except that up to four percent (by weight of rubber) calcium carbonate or talc may be added to prevent rubber particles from sticking together. The rubber shall be sufficiently dry to be free flowing and not produce foaming when blended with the hot asphalt cement.

Certification of Quality Assurance

The asphalt/rubber supplier shall furnish the Engineer the asphalt/rubber mix formulation which shall contain the following information, a minimum of seven calendar days prior to starting placement of the membrane:

Asphalt Cement	Granulated Rubber
Grade of asphalt	Total rubber content, weight
Source of asphalt	Percent of asphalt/rubber mixture

Rubber type(s) and content of each type (if blend), weight, and percent of combined rubber:

Asphalt Modifier

Type of Modifier
Quantity of modifier, weight
Percent of asphalt cement

The Contractor shall submit certifications that the asphalt cement is compatible with the rubber. New certifications will be required if the asphalt cement is changed. The supplier shall furnish a certificate of compliance with these specifications, in accordance with Section 1-06.3, for each shipment.

The granulated rubber will be accepted on receipt of a certificate of compliance with these specifications, in accordance with Section 1-06.3, from the rubber supplier.